FIG. 1(a)

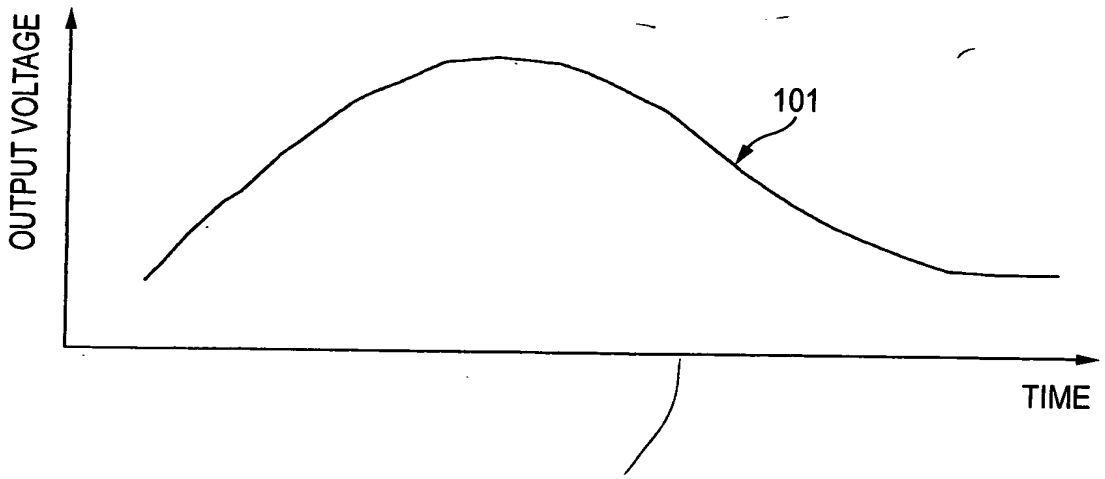

FIG. 1(b)

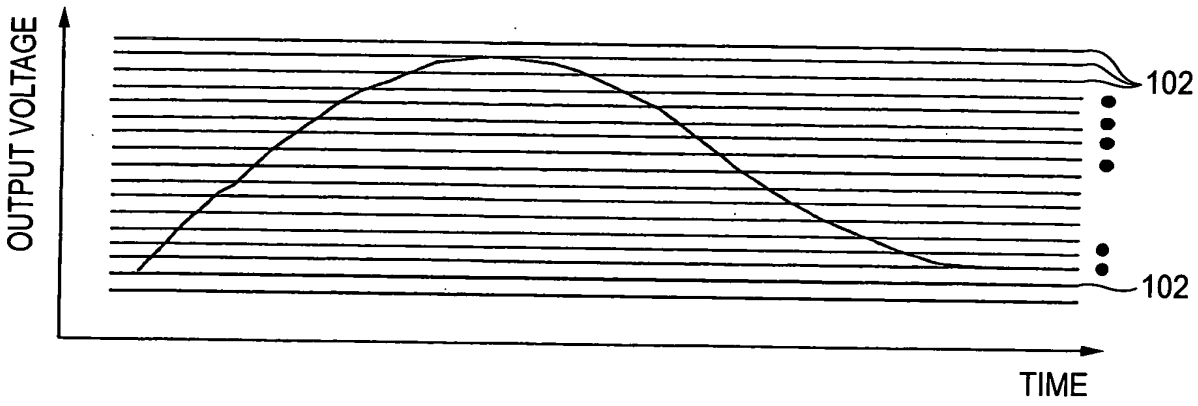

FIG. 1C

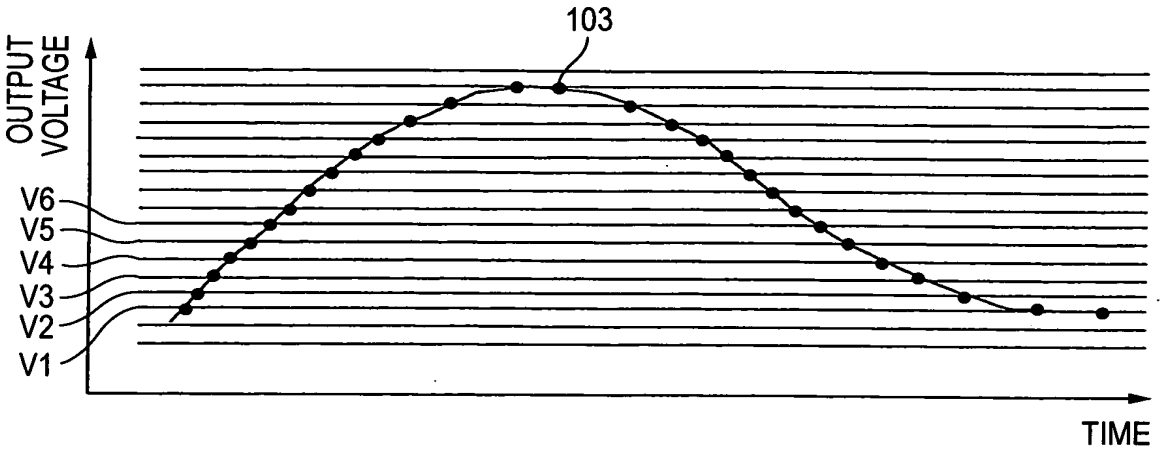
103
OUTPUT VOLTAGE
V6
V5
V4
V3
V2
V1
TIME

FIG. 1D

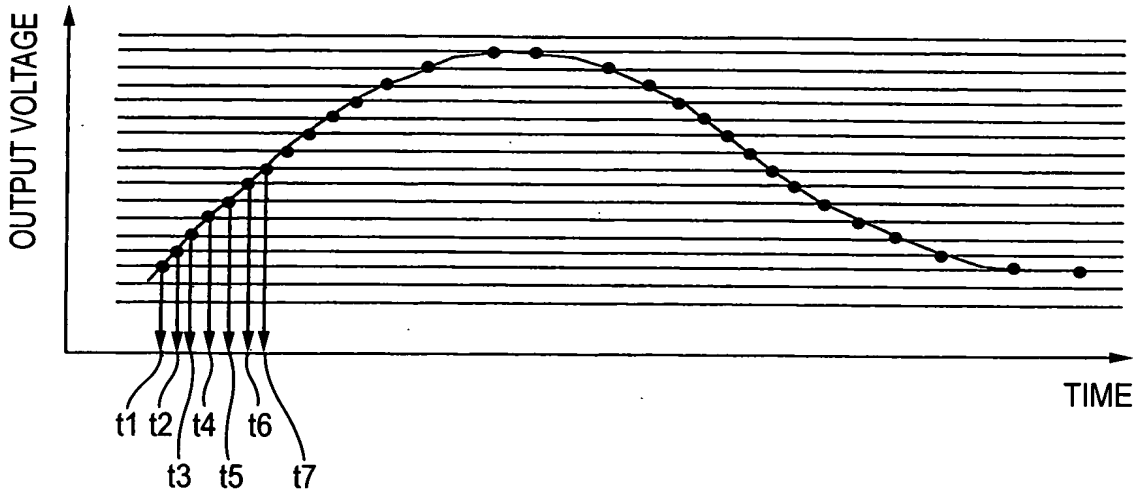
OUTPUT VOLTAGE
TIME
t1
t2
t3
t4
t5
t6
t7

FIG. 1(e)

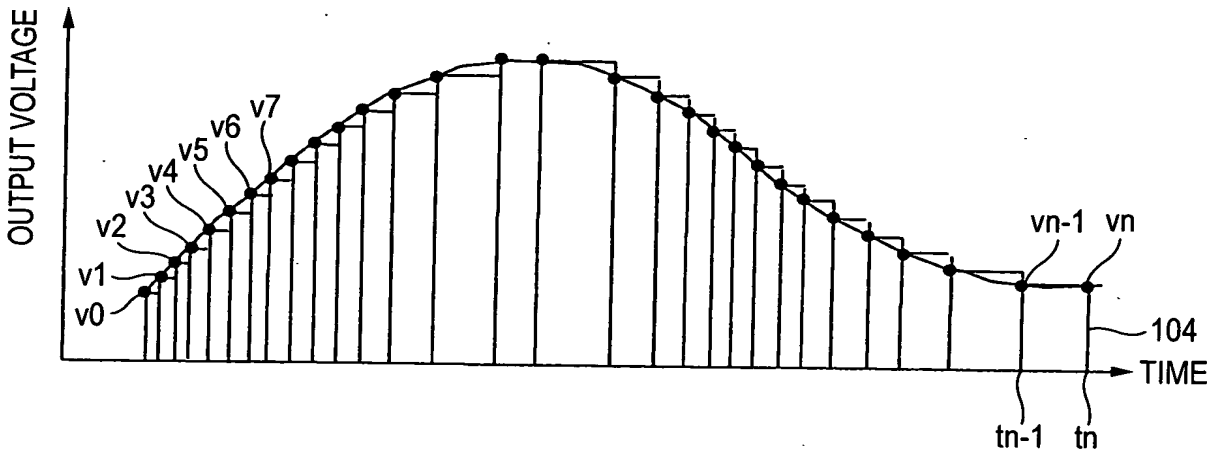

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FIG. 2

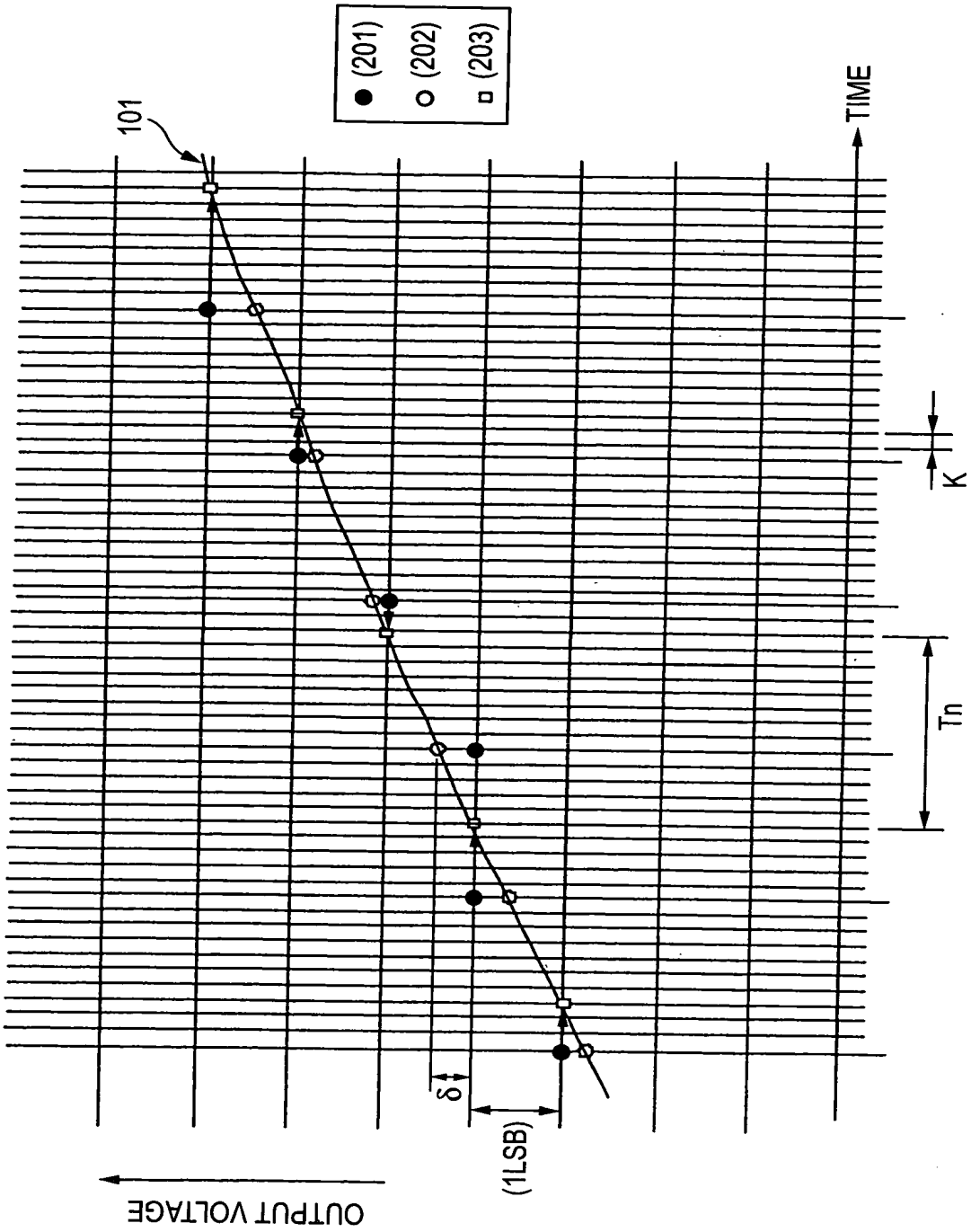

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FIG. 3(a)

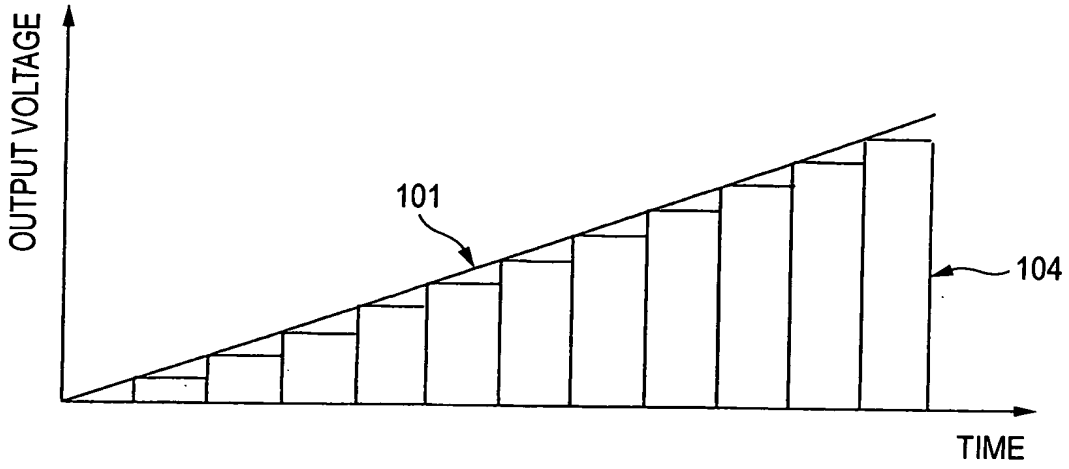

FIG. 3(b)

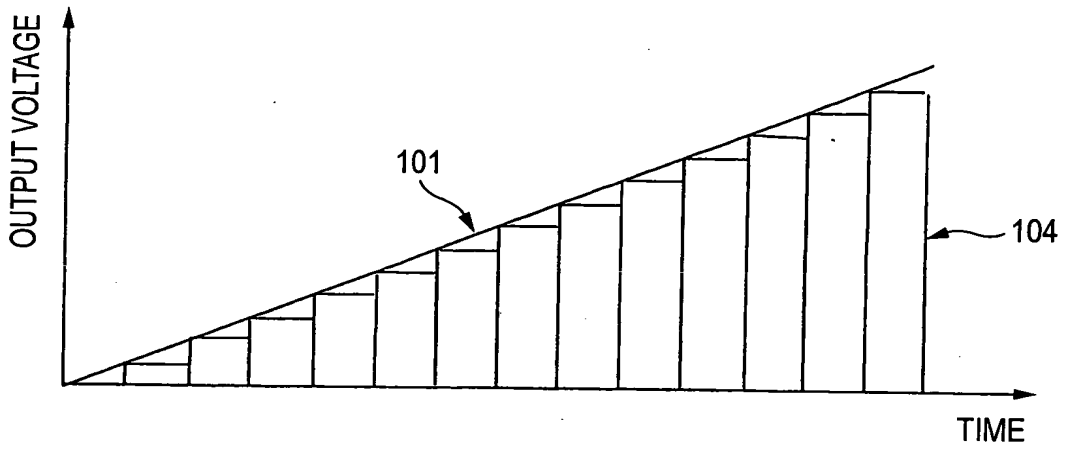

FIG. 3(c)

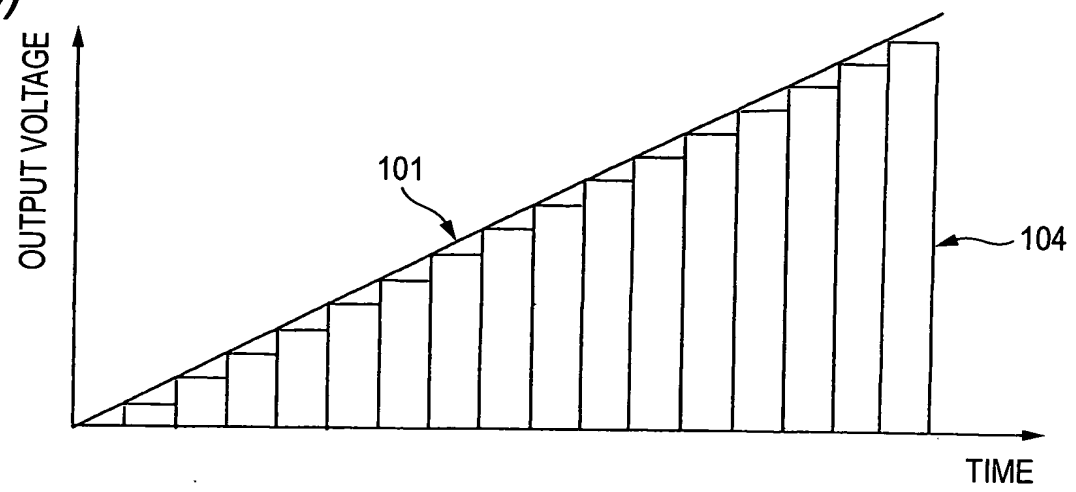

FIG. 4

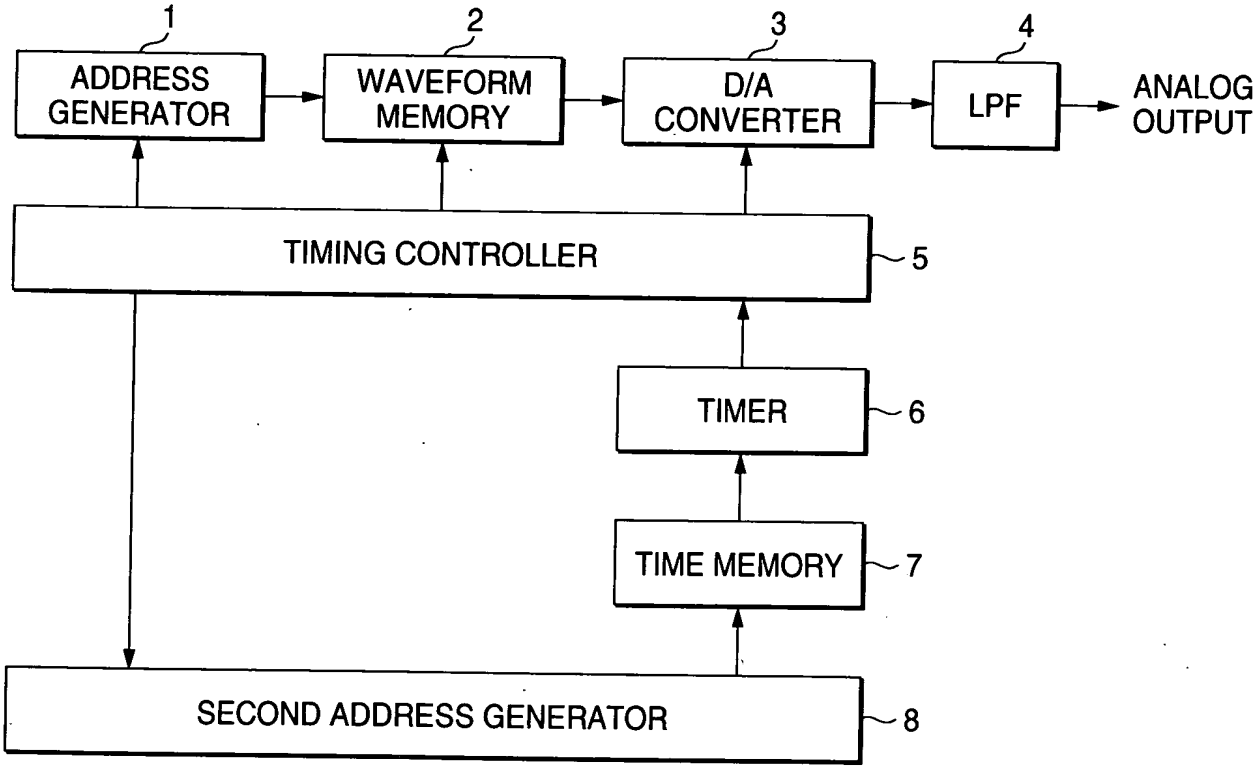
1
ADDRESS GENERATOR
2
WAVEFORM MEMORY
3
D/A CONVERTER
4
LPF
ANALOG OUTPUT
TIMING CONTROLLER
5
TIMER
6
TIME MEMORY
7
SECOND ADDRESS GENERATOR
8

FIG. 5

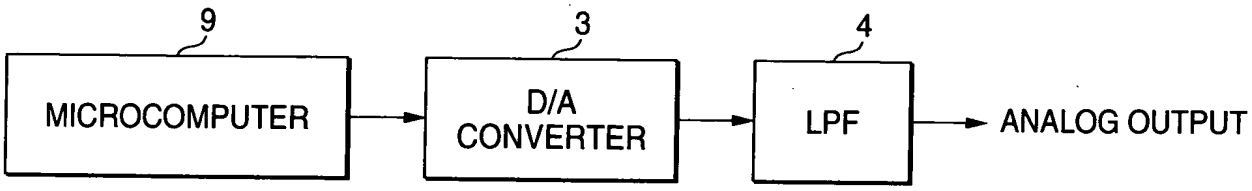

FIG. 6

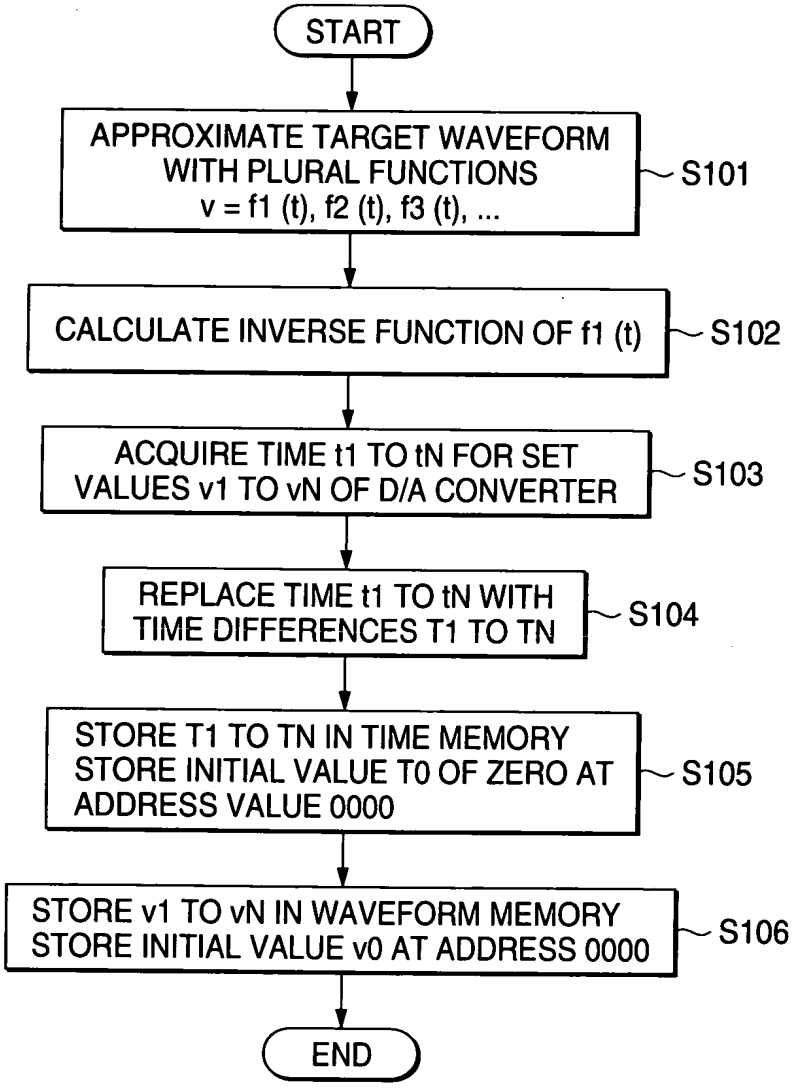
START
APPROXIMATE TARGET WAVEFORM WITH PLURAL FUNCTIONS v = f1 (t), f2 (t), f3 (t), ...
S101
CALCULATE INVERSE FUNCTION OF f1 (t)
S102
ACQUIRE TIME t1 TO tN FOR SET VALUES v1 TO vN OF D/A CONVERTER
S103
REPLACE TIME t1 TO tN WITH TIME DIFFERENCES T1 TO TN
S104
STORE T1 TO TN IN TIME MEMORY STORE INITIAL VALUE T0 OF ZERO AT ADDRESS VALUE 0000
S105
STORE v1 TO vN IN WAVEFORM MEMORY STORE INITIAL VALUE v0 AT ADDRESS 0000
S106
END

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FIG. 7 (a)

TIME MEMORY	
ADDRESS	DATA
0000	0
0001	T1
0002	T2
0003	T3
0004	T4
⋮	⋮
N - 1	TN - 1
N	TN

7

FIG. 7 (b)

WAVEFORM MEMORY	
ADDRESS	DATA
0000	V0
0001	V1
0002	V2
0003	V3
0004	V4
⋮	⋮
N - 1	VN - 1
N	VN

2

FIG. 8

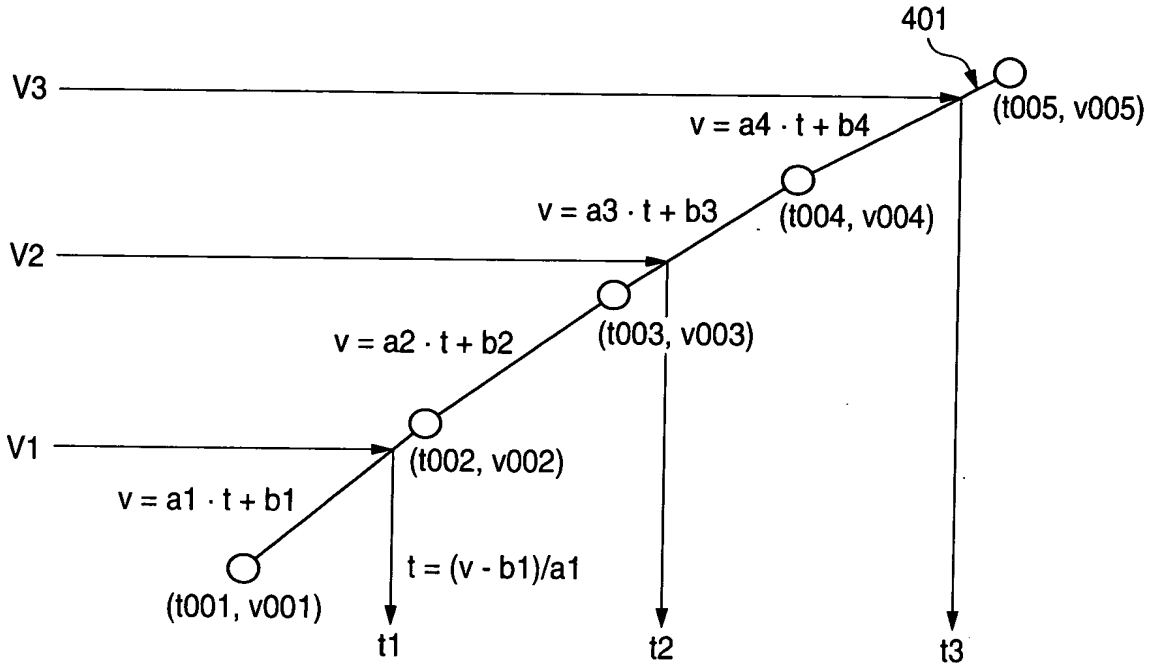
401
V3
(t005, v005)
v = a4 · t + b4
v = a3 · t + b3
(t004, v004)
V2
v = a2 · t + b2
(t003, v003)
V1
(t002, v002)
v = a1 · t + b1
t = (v - b1)/a1
(t001, v001)
t1
t2
t3

FIG. 9

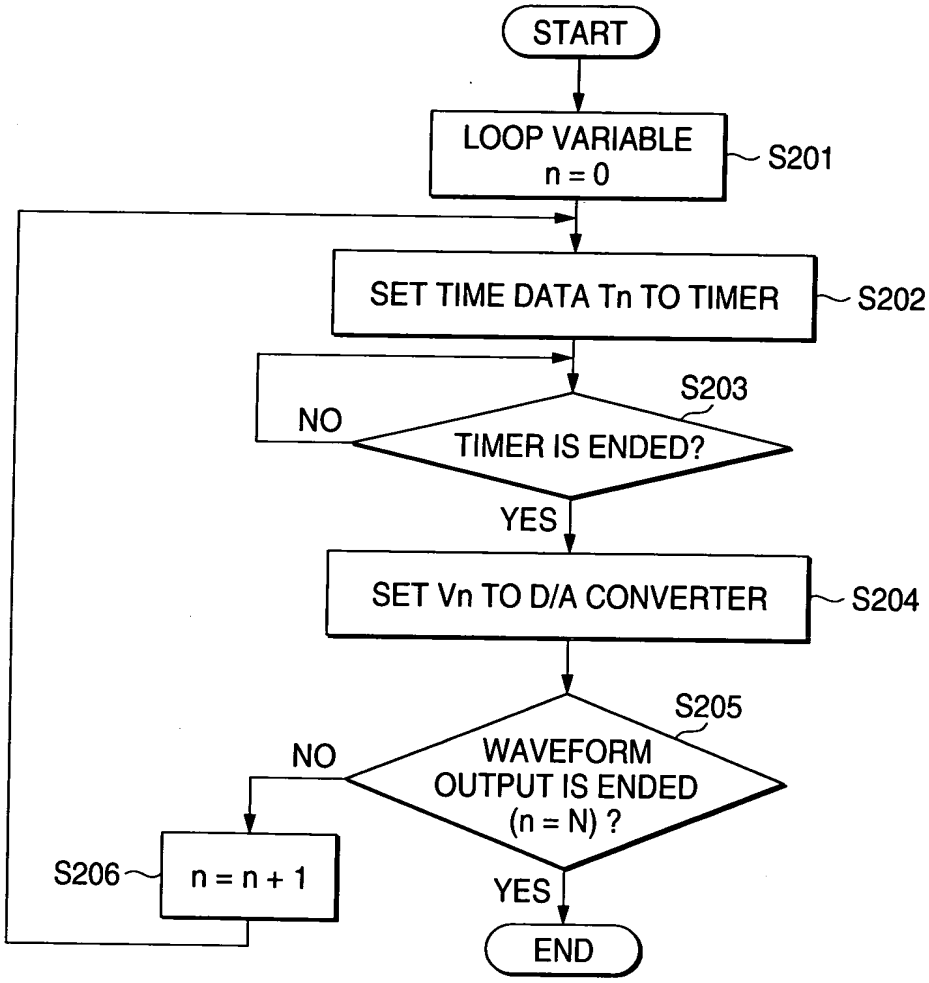
START
LOOP VARIABLE
n = 0
S201
SET TIME DATA Tn TO TIMER
S202
S203
NO
TIMER IS ENDED?
YES
SET Vn TO D/A CONVERTER
S204
S205
NO
WAVEFORM
OUTPUT IS ENDED
(n = N) ?
S206
n = n + 1
YES
END

FIG. 10 (a)

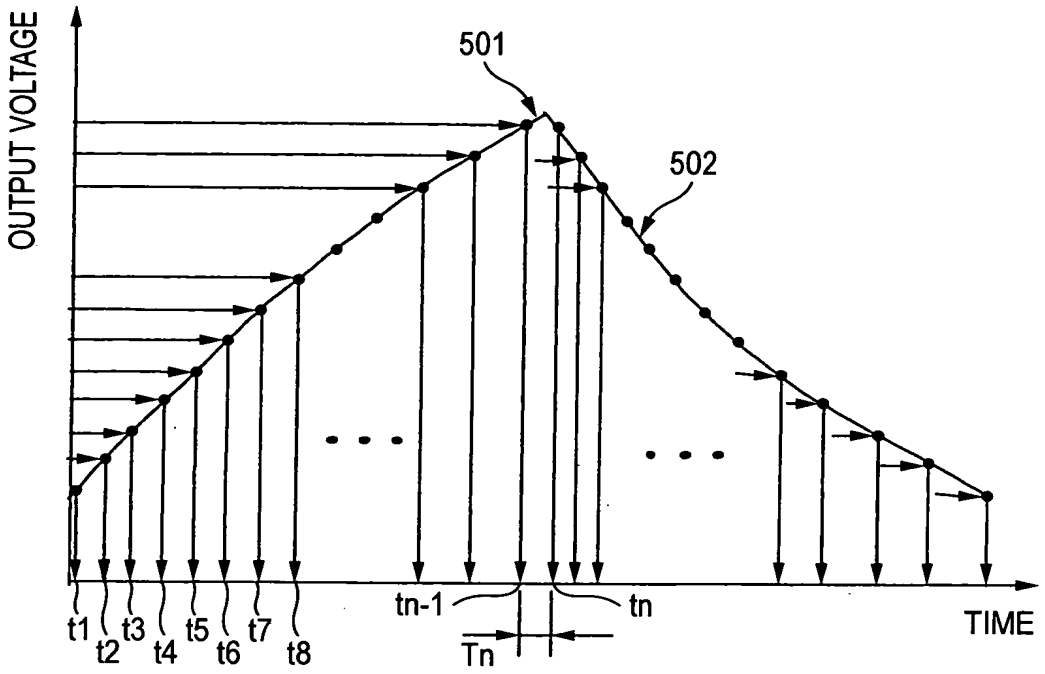

FIG. 10 (b)

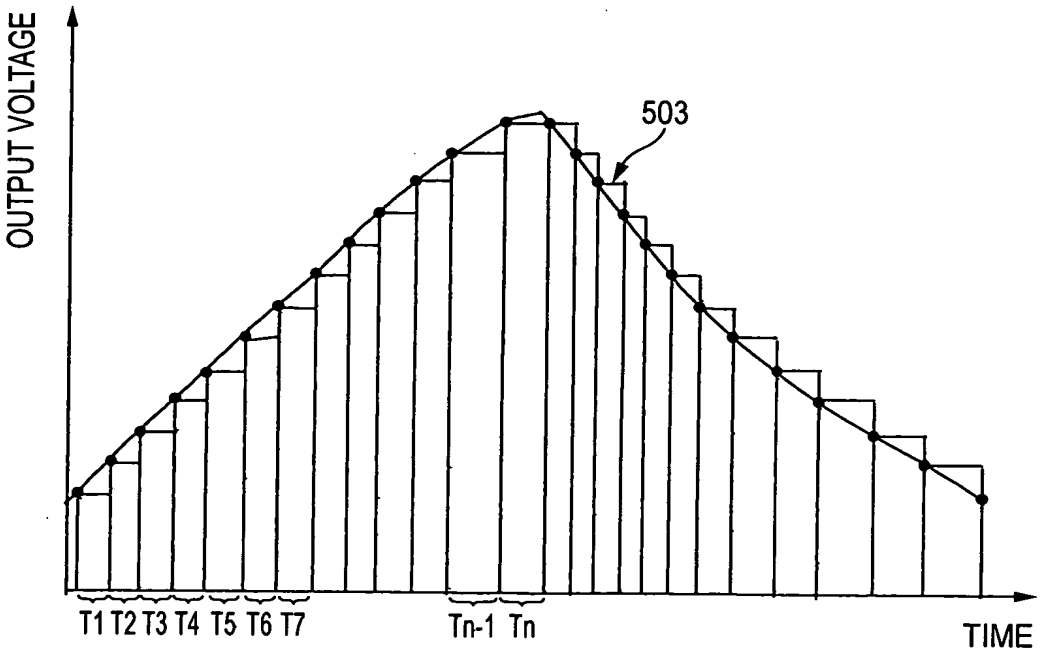

FIG. 11

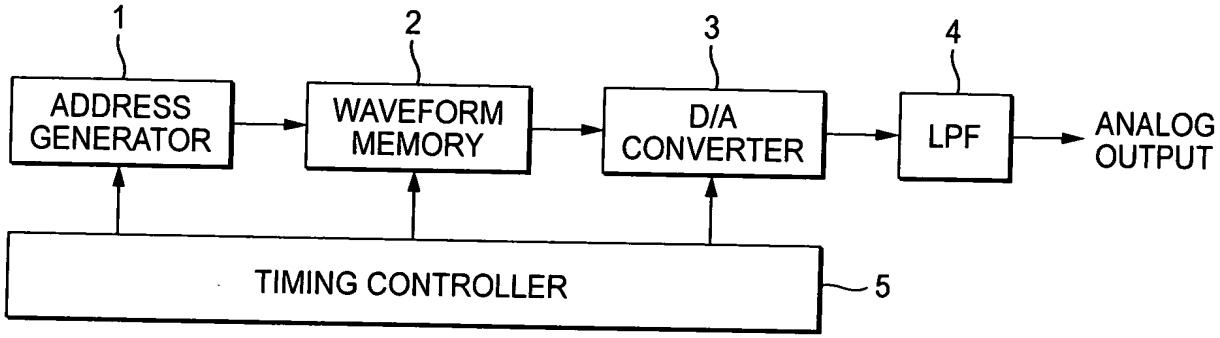
1
2
3
4
ADDRESS GENERATOR
WAVEFORM MEMORY
D/A CONVERTER
LPF
ANALOG OUTPUT
TIMING CONTROLLER
5

FIG. 12

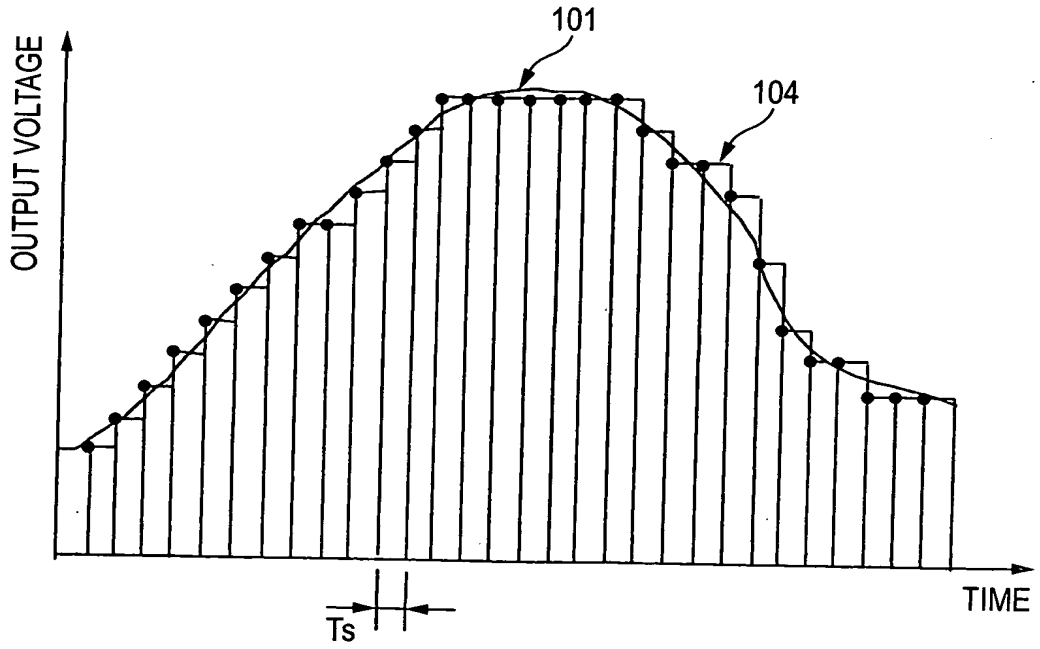
101
104
OUTPUT VOLTAGE
TIME
Ts

FIG. 13

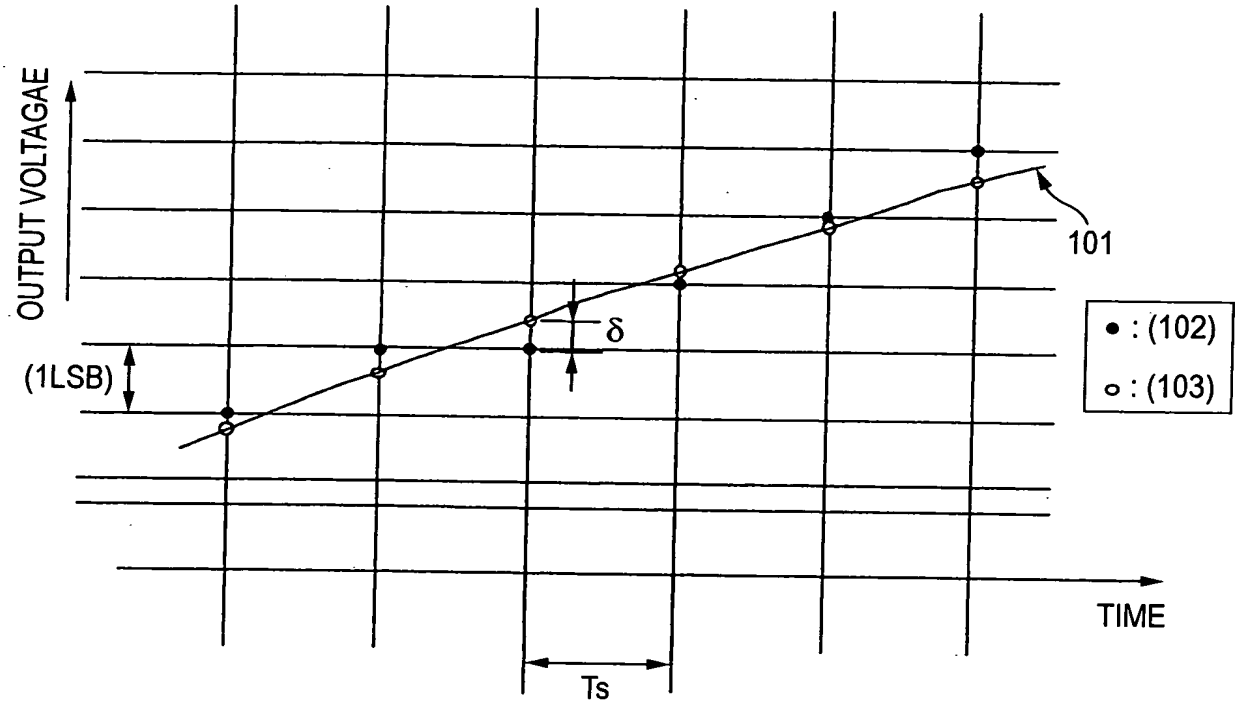

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FIG. 14

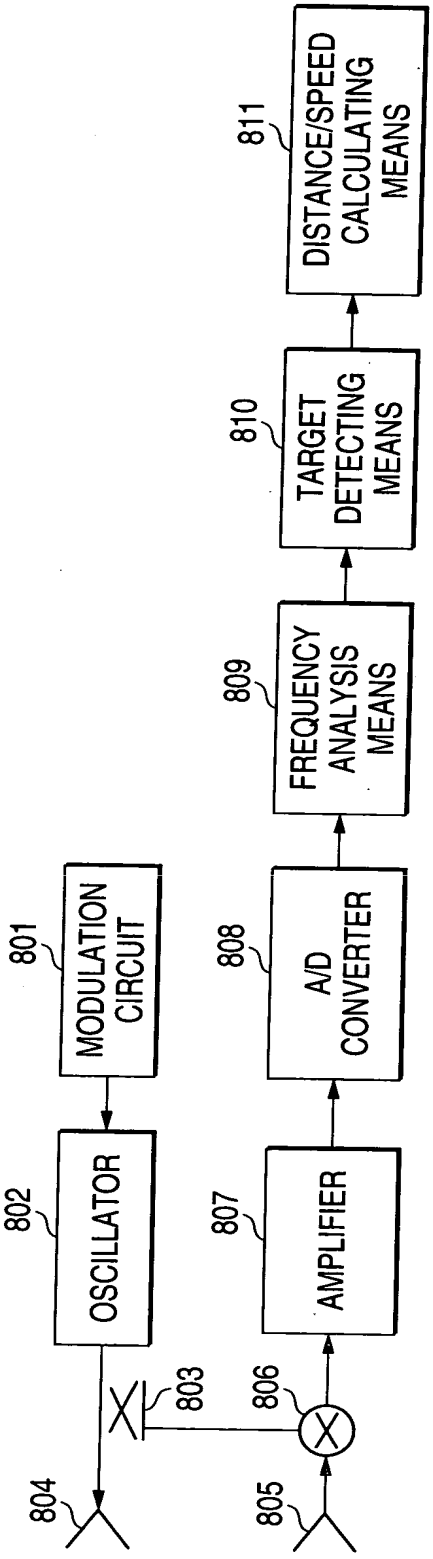

FIG. 15

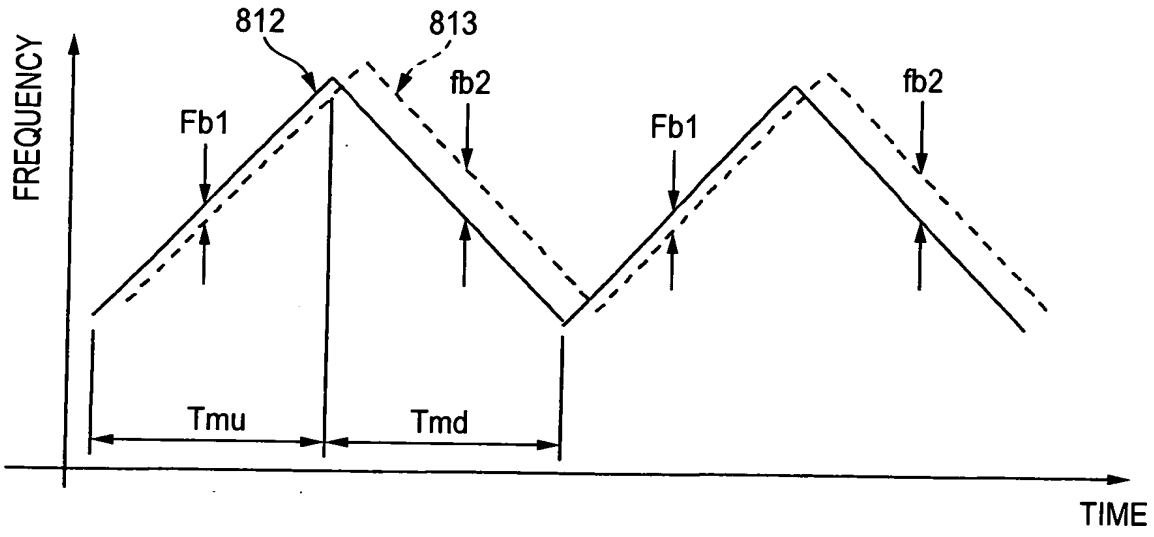

FIG. 16(a)

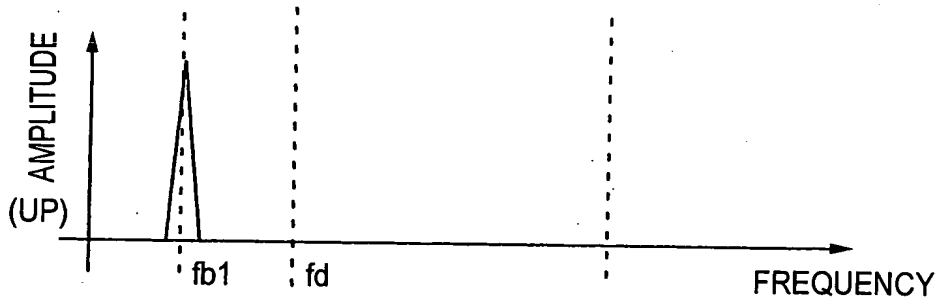

FIG. 16(b)

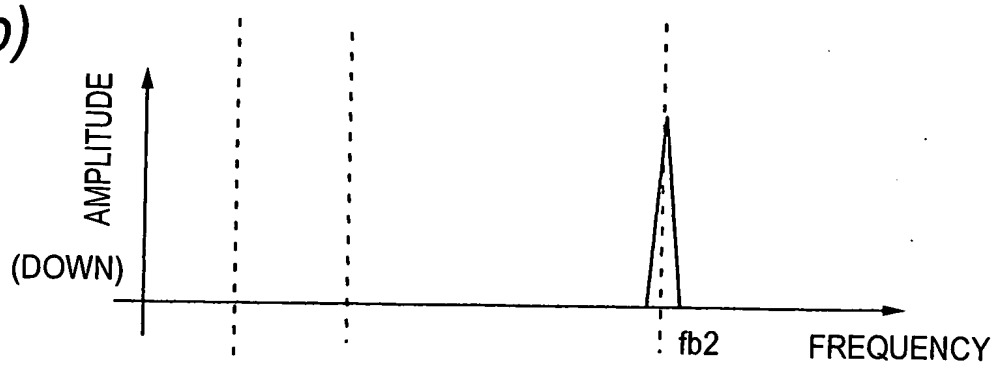

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FIG. 17(a)

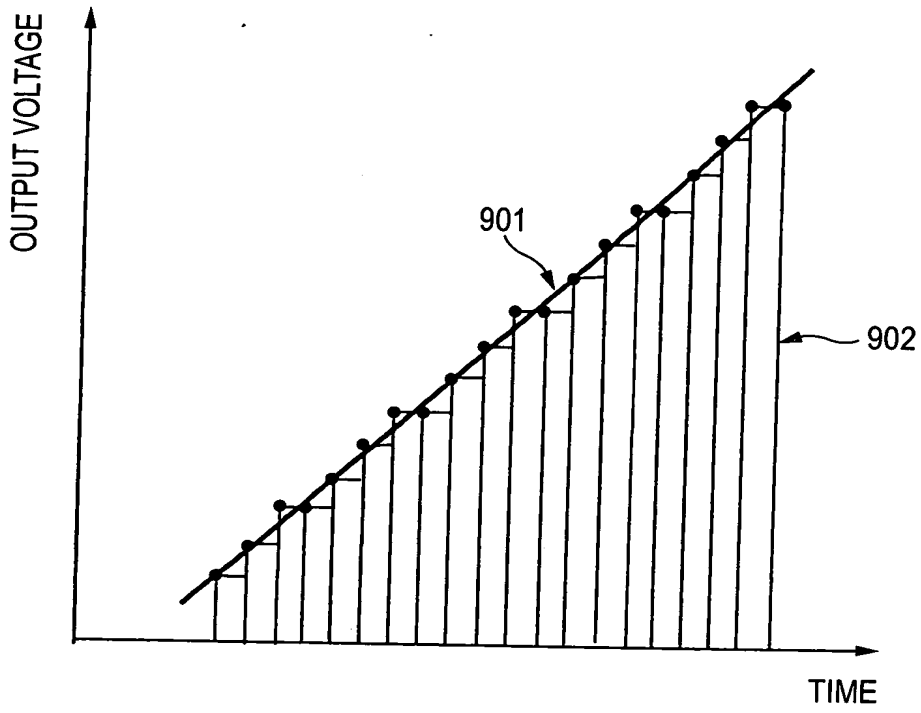

FIG. 17(b)

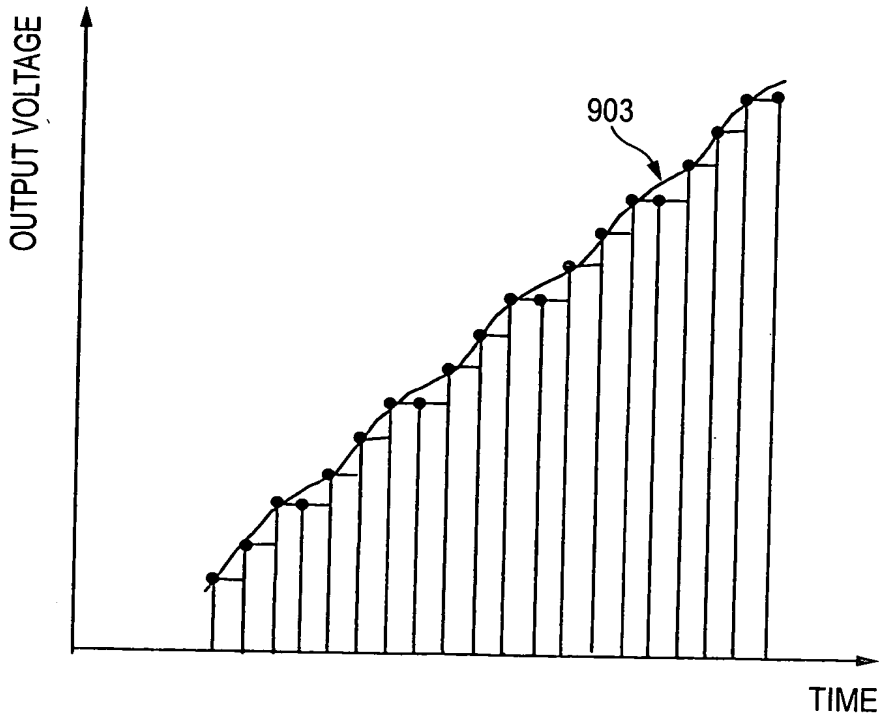

FIG. 18(a)

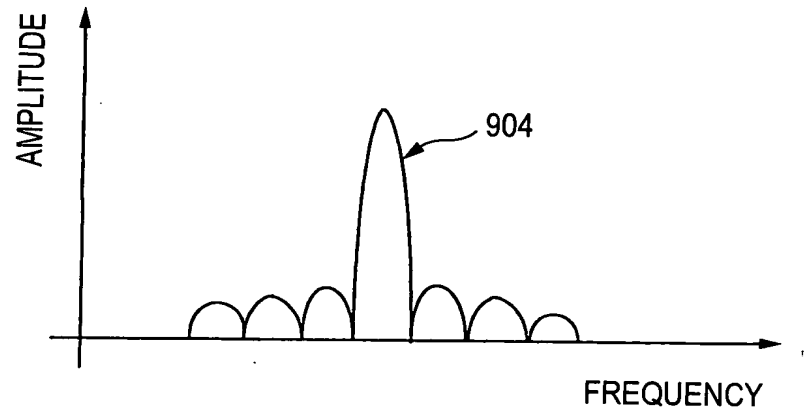

FIG. 18(b)

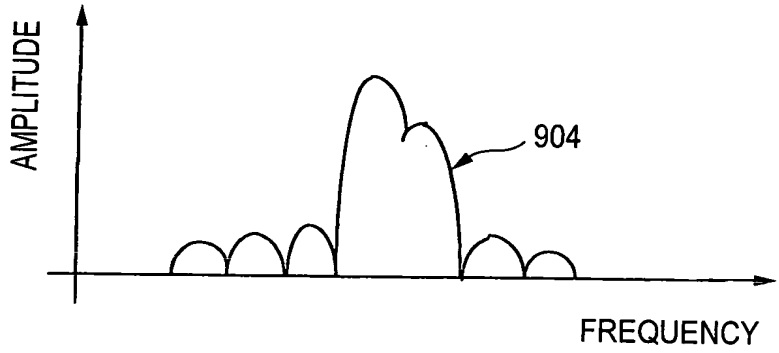
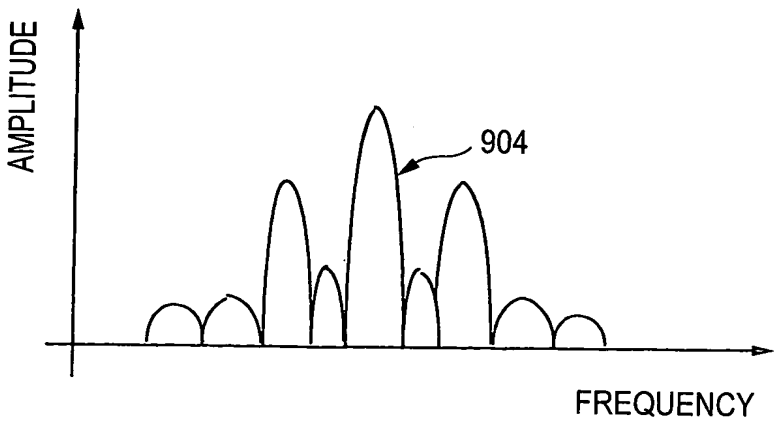
FIG. 18(c)